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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,074	07/10/2001	Daisuke Kanenari	P100021-00055	7087

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 03/06/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/901,074

Applicant(s)

KANENARI ET AL.

Examiner

Kevin M Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 5-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 4 is/are rejected.
- 7) ☒ Claim(s) 1,2 and 4 is/are objected to.
- 8) ☒ Claim(s) 1-7 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 - 4, drawn to a rubber laminate having a first composition/layer (A), a bonding composition (C), and a second composition/layer (B), classified in class 428, subclass 411.1+.
 - II. Claim 5, drawn to a pneumatic tire incorporating a rubber laminate having a first composition/layer (A), a bonding composition (C), and a second composition/layer (B), classified in class 152, subclass 450.
 - III. Claims 6 and 7, drawn to a safety pneumatic tire incorporating a runflat insert formed of a rubber composition (A), which is surrounded by a bonding rubber composition (C), classified in class 152, subclass 516.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the subcombination is required to be vulcanized while the combination only requires the laminate to be included in the

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pneumatic tire. The subcombination has separate utility such as hoses, transmission belts and additional products.

3. Inventions I and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination fails to require a rubber composition (B). The subcombination has separate utility such as hoses, transmission belts and additional products.

4. Inventions II and III are unrelated, each having a different means for establishing patentability. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, invention II is directed to a pneumatic tire containing a rubber laminate formed of three distinct rubber compositions (A, B and C). Invention II is not capable of being used together with invention III, which is directed to a safety tire having a sidewall insert formed of rubber composition A, which in turn is surrounded by bonding rubber composition C.

Inventions II and III have different modes of operation since invention II fails to require sidewall inserts formed of rubber composition A and invention III fails to require rubber composition B. As such, the respective inventions are patentably distinct and restriction is proper.

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. During a telephone conversation between Examiner Fischer and Mr. George Oram February 13, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1 - 4. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5 – 7 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Examiner's Comments

8. The Examiner notes that the term “allyl group” refers to the following structure, as taught by the reference “Organic Chemistry” (Vollhardt, K.P.C., Ed., New York, 1987, page 420):



9. The Examiner notes that claim 1 is somewhat unclear regarding what limitations pertain to which layers/compositions. The Examiner has relied upon applicants'

disclosure and for purposes of evaluating the prior art, the Examiner has interpreted claim 1 as requiring the following:

- Three-layered laminate in the order A/C/B, wherein
- (A) comprises:
 - i) 0 – 120 pbw Zn methacrylate;
 - ii) an organic peroxide; and
 - iii) 100 pbw of a rubber including at least 40 pbw of the claimed unsaturated nitrile conjugated diene-based rubber with a content of conjugated diene units of not more than 30 wt%;
- (B) comprises: a sulfur vulcanized diene-based rubber composition; and
- (C) comprises:
 - i) 100 pbw rubber, wherein 50 – 85 pbw are at least one type of diene-based rubber selected from applicants' Markush group, and 15 – 50 pbw are of the claimed unsaturated nitrile rubber as in (A) above;
 - ii) 10 – 60 pbw of Zn methacrylate;
 - iii) 0.5 – 10 pbw of an organic peroxide; and
 - iv) 5 – 50 pbw of a co-crosslinking agent that is liquid at room temperature and has at least one functional group selected from the group consisting of acryl groups, methacryl groups, and allyl groups.

Specification

10. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract of the disclosure is now limited to 150 words or 15 lines (37 CFR 1.72). See MPEP § 608.01(b).

The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

11. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. The Examiner notes that the specification appears to be a translation and some minor errors in grammar have results. Two examples are: Paragraph 24 – "if adding" should be "by adding"; and Paragraph 25, which is just one run-on sentence.

Claim Objections

12. Claim 1 is objected to because of the following informalities: the recited compositions and components are difficult to follow and applicants are suggested to consider using formatting (i.e. tabs) to better delineate which limitations correspond to each layer. For example, it is unclear if "allyl group and liquid at room temperature" means just if the co-crosslinking agent contains an allyl group it must be liquid at room temperature, if all embodiments of the co-crosslinking agent must be liquid at room temperature. Appropriate correction is required.
13. Claim 1 is objected to because of improper Markush language. The proper language is either "...selected from a group consisting of A, B, C and D." or "...is A, B, C or D." See MPEP § 2173.05(h).
14. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
15. Claim 4 is objected to because of the following informalities: insert "further" before "includes" to better clarify the layer composition.

Claim Rejections - 35 USC § 112

16. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. Claims 1 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high saturation" in claims 1 and 3 is a relative term which renders the claims indefinite. The term "high" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. This rejection can be overcome by providing evidence that the phrase "high saturation" is clearly known in the art or by amending the claim to more clearly define what is meant by "high saturation" (using enabled subject matter only).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-143306 A (JP '306 A) in view of JP 08-269241 A (JP '241 A), Saito et al.

(U.S. Patent No. 4,990,570) and Teramoto et al. (U.S. Patent No. 4,313,865). See provided Abstract and Machine Translations of JP '306 A and JP '241 A.

Regarding claim 1, JP '306 A disclose a rubber laminate comprising a rubber composition (A) ('306 A – layer (A)) optionally comprising zinc methacrylate (*Paragraph 0007*) and an organic peroxide (*Paragraph 0006*) into a nitrile rubber (*Paragraph 0006*), and a sulfur vulcanized diene-based rubber composition B (*Paragraph 0006* – '306 A – layer (B)), and a vulcanized (*Paragraph 0051*) bonding rubber composition C ('306 A – layer (C)) comprising at least one diene-based rubber meeting applicants' Markush group (*Paragraph 0006 – element (a)*) and a nitrile rubber (*Paragraph 0006 – element (b)*).

JP '306 A fail to disclose a bonding rubber composition (C) comprising 100 parts by weight of a rubber containing 50 to 85 pbw of at least one type of diene-based rubber selected from applicants' Markush group and 15 – 50 pbw of an ethylenic unsaturated nitrile-conjugated diene-based rubber with a content of conjugated diene units of not more than 30 wt%, plus 10 to 60 pbw of zinc methacrylate and 0.3 pbw of an organic peroxide.

However, JP '241 A teach a rubber composition containing 50 to 85 pbw of at least one type of diene-based rubber selected from applicants' Markush group (*Paragraphs 0006 and 0009; and Derwent Abstract*) and 15 – 50 pbw of an ethylenic unsaturated nitrile-conjugated diene-based rubber with a content of conjugated diene units of not more than 30 wt% (*Paragraphs 0006 and 0009; claim 1; and Derwent Abstract*), plus 10 to 60 pbw of zinc methacrylate (*Derwent Abstract and Paragraph*

0010) and 0.3 to 10 pbw of an organic peroxide (*Derwent Abstract and Paragraph 0011*). JP '241 A further teach that such a composition offers a high hardness and good adhesion to sulfur vulcanized rubber layers (i.e. layer (B) of JP '306 A).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of JP '306 A to include a bonding layer composition as described above as taught by JP '241 A, since such a composition offers a high hardness and good adhesion to sulfur vulcanized rubber layers.

The Examiner further notes that the exact amounts of each compound are cause-effective variables in terms of the physical properties, such as extent of cross-linking, degree of hardness and abrasion resistance (*Paragraphs 0001 – 0004*). It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the exact parts by weight of each component through routine experimentation, especially given the teachings in JP '241 A regarding the preferred ranges for the various components. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Neither JP '306 A nor JP '241 A teach a rubber composition (A) comprising at least 40 parts by weight of an ethylenic unsaturated nitrile-conjugated diene-based rubber with a content of conjugated diene units of not more than 30 wt%, an organic peroxide and optionally zinc methacrylate.

However, Saito et al. teach that nitrile rubber compositions meeting applicants' claimed limitations (*col. 1, lines 45 – 60*) are known in the art to possess excellent strength, abrasion resistance and resistance to compression set (*col. 1, lines 6 – 11*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of JP '306 A in view of JP '241 A to include a rubber composition (A) comprising an ethylenic unsaturated nitrile-conjugated diene-based rubber with a content of conjugated diene units of not more than 30 wt%, an organic peroxide and optionally zinc methacrylate as taught by Saito et al. in order to form an outer layer (A) possessing excellent strength, abrasion resistance and resistance to compression set.

None of the above references teach adding to bonding rubber composition (C) 5 to 50 pbw of a co-crosslinking agent that is liquid at room temperature and has one of an acryl group, methacryl group, and an allyl group.

However, Teramoto et al. teach that it is known in the art that when "co-crosslinking agents" which are liquid at room temperature (*col. 1, lines 7 – 10*) and which contain at least one of acryl, methacryl or allyl groups (*e.g., 2-cyanoacrylate*) are added to diene-based adhesives in an amount meeting applicants' claimed limitations (*col. 1, lines 63 – 68; col. 3, lines 6 – 47 and Examples*), that they result in an instant-setting adhesive with improved impact resistance, peel resistance, heat resistance and water resistance (*col. 1, lines 4 – 6*). The exact amount of "co-crosslinking agent"

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added is a cause-effective variable in terms of the physical properties, such as extent of cross-linking, impact resistance and adhesion characteristics (*col. 3, lines 6 – 47*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of JP '306 A in view of JP '241 A and Saito et al. to include 5 to 50 pbw of a co-crosslinking agent that is liquid at room temperature and has one of an acryl group, methacryl group, and an allyl group as taught by Teramoto et al., since such an addition would result in an instant-setting adhesive with improved impact resistance, peel resistance, heat resistance and water resistance.

The limitations in claim 3 are product-by-process limitations and are not further limiting in so far as the structure of the product is concerned. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. ***The patentability of a product does not depend on its method of production.*** If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” [emphasis added] *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. Once a product appearing substantially identical is found, the burden shifts to applicant to show an ***unobvious*** difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

In the instant case, the product of the prior art appears substantially identical, since the final product will possess a combination of the ethylenic unsaturated nitrile

rubber, zinc methacrylate and the diene-based rubber regardless of the order which they are mixed.

Regarding claim 4, JP '306 A disclose adding an aromatic petroleum resin to the bonding resin layer in order to improve the adhesive strength (*Paragraphs 0011 – 0014 and JPO Abstract*). The exact amount of aromatic petroleum resin added (*Paragraph 0014*) is a cause-effective variable in terms of the cost and adhesion characteristics (*Paragraphs 0011 - 0013*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to add an aromatic petroleum resin in an amount meeting applicants' claimed limitations to the rubber bonding layer (C) as taught by JP '306 A in order to improve the adhesive strength of the layer.

20. Claims 1 - 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-143306 A (JP '306 A) in view of JP 08-269241 A (JP '241 A), Saito et al. (570) and Horowitz et al. (U.S. Patent No. 4,051,090). See provided Abstract and Machine Translations of JP '306 A and JP '241 A.

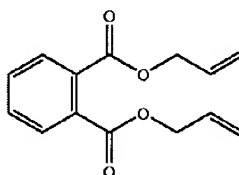
Regarding claims 1, 3 and 4, JP '306 A in view of JP '241 A and Saito et al. are relied upon as described above in Paragraph 19.

None of JP '306 A, JP '241 A or Saito et al. teach adding to bonding rubber composition (C) 5 to 50 pbw of a co-crosslinking agent that is liquid at room temperature and has one of an acryl group, methacryl group, and an allyl group.

However, Horowitz et al. teach that it is known in the art to add “co-crosslinking agents” to diene-based rubber compositions, wherein the “co-crosslinking agent” comprises acryl, methacryl or allyl groups and is liquid at room temperature (*col. 5, lines 31 – 35 – e.g. diallyl phthalate, m.p. = -70 °C*), in order to improve the adhesive bonding between elastomeric substrates (*col. 2, lines 11 – 13*). The exact amount of “co-crosslinking agent” added is a cause-effective variable in terms of the physical properties, such as extent of cross-linking, impact resistance and adhesion characteristics (*col. 5, lines 31 - 37*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of JP '306 A in view of JP '241 A and Saito et al. to include 5 to 50 pbw of a co-crosslinking agent that is liquid at room temperature and has one of an acryl group, methacryl group, and an allyl group as taught by Teramoto et al., since such an addition would result in an instant-setting adhesive with improved impact resistance, peel resistance, heat resistance and water resistance.

Regarding claim 2, diallyl phthalate is an aromatic ester containing an allyl group (see structure below).



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Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schoenberg et al. (U.S. Patent No. 4,125,494) teach 2-cyanoacrylates comprising an aromatic ester as a preferred 2-cyanoacrylate (*col. 1, lines 7 – 17 and col. 1, line 61 bridging col. 2, line 9*). Hirakawa (U.S. Patent No. 5,405,690) teaches the amount of Zn methacrylate and organic peroxide to add (*col. 3, line 62 bridging col. 4, line 3 and col. 4, lines 39 - 44*), as well as the equivalence of the various diene-type rubbers (*col. 4, lines 4 – 8*) and the use of less than 30% conjugated diene units in the rubber (*col. 4, lines 39 – 41*). Mori et al. (U.S. Patent No. 5,783,625) teach adding acryl and methacryl groups to liquid rubber compounds to improve the adhesive properties (*col. 1, line 66 bridging col. 2, line 9; col. 3, lines 16 – 49; and col. 3, line 57 bridging col. 4, line 25*). JP 58-096666 A (JP '666 A) teach that adding an acrylic monomer to a diene rubber adhesive improves the stability and adhesion properties (JPO Abstract).

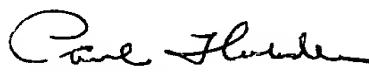
22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB
March 4, 2003



Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700